A NEW SPECIES OF *SWELTSA* (PLECOPTERA: CHLOROPERLIDAE) FROM EASTERN NORTH AMERICA[1]

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ABSTRACT: *Sweltsa holstonensis*, new species, is described from southwestern Virginia. The new species is most similar to *Sweltsa urticae*. The male epiproct of both species are illustrated for comparison.

The genus *Sweltsa* in the Eastern Nearctic is represented by eight species (Kondratieff and Kirchner 1991). These species, with the exception of *S. naica* (Provancher), form a monophyletic lineage based on male epiproct shape. Two species of this group, *S. urticae* (Ricker) and *S. voshelli* Kondratieff and Kirchner, are related and constitute a distinctive clade within the group. Both species have the epiproct broadly dorsolaterally flanged and occur in small streams of the Southern Appalachian Mountains. A third member belonging to this clade was recently discovered in southwest Virginia by Bill P. Stark and Ralph F. Kirchner.

Sweltsa holstonensis NEW SPECIES

(Figs. 1-2)

Male.- Body length 7.5-8.0 mm. Macropterous, length of forewing 8.5-9.0 mm. General color bright yellow in life, yellow-white in alcohol. Head with three dark ocellar rings. Pronotum with black margins, no median stripe. Middorsal region of abdominal terga 1-9 with black dashes or stripes. Terga 9 with transverse ridge (Figs. 1-2). Epiproct erectile, inflated in dorsal view (Fig. 1), forming a flange laterally for most of its length, covered with appressed golden hairs; in lateral view deeply incurved on distal fourth forming a dorsally directed hook, apex projecting above dorsal plane and not transversely compressed; ventral aspect convex in lateral view (Fig. 2).
Female.- Body length 9.5-10.5 mm. Macropterous, length of forewing 10-10.5 mm. General color and pattern as male. Subgenital plate about as long as wide, lateral margins slightly incurved; apex acutely rounded, about one-fifth width of plate.

Types.- Holotype male, Washington County, Virginia, Little Moccasin Creek, County Rt. 690, 15 May 1997, B. P. Stark and R. F. Kirchner. Paratypes, same data as holotype, 2 males; same data as holotype but 19 May 1998, R. F. Kirchner, 3 males, 3 females. The holotype will be deposited in the United States Museum of Natural History, Smithsonian Institution, Washington D.C., and paratypes in the collection of R. F. Kirchner and the C.P. Gillette Museum of Arthropod Diversity, Colorado State University.

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[4] The views of this author do not purport to reflect the position of the Department of the Army or the Department of Defense.

Etymology.- The specific epithet refers to the Holston Valley of the Great Appalachian Valley of Virginia. In Virginia, the Great Valley is divided into the Shenandoah, Roanoke, New, and Holston Valleys based on drainage systems. Little Moccasin Creek flows into the North Fork of the Holston River at Holston.

Diagnosis.- Males of *S. holstonensis* can be distinguished from *S. urticae* by the hook of the epiproct lacking the transversely compressed apex (Fig. 3), epiproct ventrally convex, hook of epiproct usually exceeding the level of the dorsal plane, and flange of epiproct covered with appressed golden hairs. Additionally, the male of *S. holstonensis* can be separated from the only other similar species, *S. voshelli*, by an epiproct only 2 to 3 times as long as the greatest width and not gradually tapering to the apex (Figs. 2 and 3, Kondratieff and Kirchner 1991). The female is similar to both *S. urticae* and *S. voshelli*, but can be distinguished from *S. voshelli* by the acutely rounded apex of the subgenital plate (*S. voshelli*, the apex is broadly rounded), and from *S. urticae* by the longer and narrower apex, about one-fifth width of subgenital plate.

Remarks.- Little Moccasin Creek is a high gradient mountain stream originating at Low Gap (1150.3 m) between the Clinch and Brumley Mountains. It flows

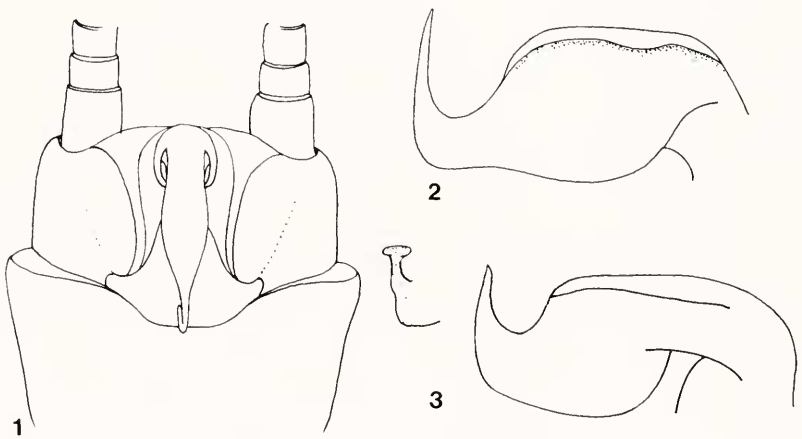

Fig. 1.-3. *Sweltsa holstonensis*. 1. male terminalia, dorsal. 2. epiproct, lateral view. *Sweltsa urticae*. 3. epiproct, lateral view; inset, tip.

south 8.04 km to its confluence with the North Fork of the Holston River (438.9 m) at Holston, just northwest of Abingdon. Most of the original forest was cleared for upland pasture. Virginia's threatened peltoperlid, *Tallaperla lobata* Stark, was also collected from Little Moccasin Creek near Low Gap (Kondratieff and Kirchner 1991). Other species collected with *S. holstonensis* included *Alloperla usa* Ricker, *S. lateralis* (Banks), *S. onkos* (Ricker), and *Yugus* n. sp.

ACKNOWLEDGMENTS

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LITERATURE CITED

Kondratieff, B. C. and R. F. Kirchner. 1991. New Nearctic Chloroperlidae (Plecoptera). J. N.Y. Entomol. Soc. 99: 199-203.

Kondratieff, B. C. and R. F. Kirchner. 1991. Stoneflies. Pp. 214-225. In: Virginia's Endangered Species. K. Terwilliger (ed.). McDonald & Woodward Publ. Co., Blacksburg, VA.

BOOKS RECEIVED AND BRIEFLY NOTED

RECENT ADVANCES IN ARTHROPOD ENDOCRINOLOGY. G.M. Coast & S.G. Webster, eds. 1998. Cambridge Univ. Press. 406 pp. $110.00 (hardcover).

Nearly fifty contributors describe current work in selected areas of arthropod endocrinology and highlight directions future studies may take. Endocrine mechanisms are dealt with in the first sixteen chapters, while the final two chapters are concerned with peptide processing and the development of stable lipophilic peptidomimetics.

THE BUTTERFLIES OF WEST VIRGINIA AND THEIR CATERPILLARS. Thomas J. Allen. 1997. Univ. of Pittsburgh Press. 388 pp. 50 plates in color. $37.50 (cloth); $22.95 (trade paper).

Descriptions of 128 species of butterflies, along with their caterpillars and pupae, found in West Virginia. Each species account provides a description and information on distribution, habitat, life history, nectar sources, and larval host plants. Twenty of the fifty colored plates depict larvae and pupae, many not published elsewhere. Included are chapters on studying butterflies and butterfly gardening.

INSECT HORMONES. H. E. Frederick Nijhout. A 1998 paperback edition of a 1994 edition. Princeton Univ. Press. 267 pp. ($19.95 (paper).

The emphasis in this book on insect endocrinology is on the biology of the organism and the ways in which physiological and developmental regulatory mechanisms are integrated into the insect's life cycle.